PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Setsuo MISHIMA, et al.

Appln. No.: 10/715,568

Confirmation No.: 5060

Filed: November 19, 2003

Docket No: Q78557

Group Art Unit: 1742

Examiner: Kathleen A. McNelis

For: MARAGING STEEL AND METHOD OF PRODUCING THE SAME

STATEMENT OF SUBSTANCE OF INTERVIEW/ARGUMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Telephone interviews were conducted with the Examiner on August 28, 2007.

The interview began as an exploratory interview by Applicants' representative to see if the Examiner felt that the recent claim amendments distinguish the prior art, without references to any particular prior art.

The Examiner commented upon JP '212, Floreen and JP '957 in brief. The Examiner did not comment upon Uehara. However, the Examiner did focus on Smith, and suggested that Applicants carefully review the specification and see if any arguments for criticality could be advanced based on data in the specification to distinguish Smith. The Examiner specifically referred to the teaching in Smith at column 2, lines 9 and 10 that "small amounts up to 0.25% of calcium and/or magnesium" could be present.

Applicants were contacted, and offer the following comments on Smith.

First, Smith contemplates up to 2,500 ppm of magnesium. This would read on 0 ppm and 2,500 ppm and, of course, intermediate values, but the disclosure in Smith is not overly clear on

this point. Nonetheless, some things are clear. First, Mg is expensive. At least standing alone, Smith does not give any reason for adding "small amounts up to 0.25% of calcium and/or magnesium.", so viewing Smith alone there is no incentive to add Ca and/or Mg for any particular purpose. Given that background, it is logical to assume that one of ordinary skill in the art would be just as easily be motivated to use 0 ppm Ca and/or Mg or as much as 2,500 ppm Ca and/or Mg or possibly some value in between. However, the present invention is specific on two points:

The consumable electrode contains not less than 5 ppm of Mg;

Hand in hand, the final maraging steel contains less than 15 ppm of Mg.

If the Examiner will refer to Comparative Steel Nos. 5 and 6 in Table 1, it can be seen that if the Mg content in a consumable electrode is less than 5 ppm, which is much less than 2,500 ppm, it is impossible to refine intermetallic conclusions. Smith will be just as likely to use the 0.0001 mass % of Mg in the Comparative Steel as it would be for Smith to use no Mg.

Applicants respectfully submit that barring any teaching of the necessity of using Mg and the necessity of using not less than 5 ppm and yet at the same time forming a maraging steel having less 15 ppm of Mg, the Mg amounts of the claims herein is not reasonable taught or suggested in Smith.

They offer the following general remarks on Smith.

First, the Inventor's have no experimental data on a maraging steel after the VAR process which contains more than 15 ppm Mg. In the case where the Mg content in a maraging steel after the VAR process is close to 15 ppm, the ingot skin thereof becomes rough, and a great amount of additive Mg makes the steel expensive. On the other hand, if the maraging steel contains such a

high amount of Mg, an intermetallic compound of Ni-Mg is liable to be produced to deteriorate the steel in hot workability. These are the reasons why there is no experimental data of maraging steels after the VAR process which contain more than 15 ppm Mg.

Smith recites that "The subject steel may also contain --- small amounts up to 0.25% of calcium and/or magnesium." (Column 2, lines 7-10) (*Note: 0.25% = 2,500 ppm).

However, this is a mere general suggestion which teaches a permissible additive amount(s) of calcium and/or magnesium, where no particulars are mentioned.

On the other hand, in the maraging steel of the present invention, the final product contains not more than 15 ppm Mg. The intention of this limit is to restrain the Mg content to be as small as possible taking into consideration that residual Mg in the final product deteriorates the toughness of the material.

When obtaining a maraging steel product in which the Mg content is limited as above, one of ordinary skill in the art would not intend to add a large amount of Mg, which must be usually excluded, into the maraging steel unless he were to find beneficial effects of Mg on non-metallic inclusions in the steel during the producing of the steel as in the present invention.

While it would be very difficult to produce a steel product containing a high amount of Mg such as 2,500 ppm in Smith, if the recitation of Smith is correct, a specific production process must be developed.

In Smith, while there are shown some embodiment steels without Mg which were produced through VIM-VAR processes, if a high amount of Mg having a high vapor pressure must be left in a final steel product essentially very complex processing would have to be used.

Applicants provide brief information on the interview below.

REMARKS

During the interview, the following was discussed :

1. Brief description of exhibits or demonstration: NONE

2. Identification of claims discussed: 1.

3. Identification of art discussed: all except Uehara, but only Smith in detailed.

4. Identification of principal proposed amendments: NONE

5. Brief Identification of principal arguments: Working Examples show criticality.

6. Indication of other pertinent matters discussed: Whether "inclusions comprising nitrides having a nucleus of MgO" were included in the 5 ppm of Mg.

7. Results of Interview: No agreement reached.

Applicants have advised that the non-metallic inclusions comprising nitrides having a nucleus of Mg are included in the less than 5 ppm of Mg.

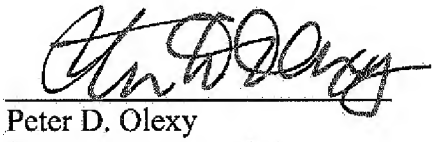
If the Examiner has any particular language on this point, the Examiner is requested to telephone the undersigned.

Finally, in claim 1, the first occurrence of "vacuum remelting" will be changed to --vacuum arc remelting--.

It is respectfully submitted that the instant STATEMENT OF SUBSTANCE OF INTERVIEW complies with the requirements of 37 C.F.R. §§1.2 and 1.133 and MPEP §713.04.

It is believed that no petition or fee is required. However, if the USPTO deems otherwise, Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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